



Arc Faults and Electrical Safety

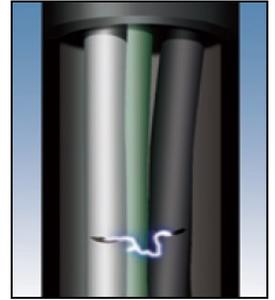
What is an arc fault and how does an arc fault circuit interrupter (AFCI)



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WHAT IS AN ARC FAULT?

Most people are familiar with the term arcing. Arcing may be intended, such as with an arc welder or unintended, such as when a tree falls on a power line during a storm creating a current discharge between conductors or to ground. An arc fault is an unintended arc created by current flowing through an un planned path. Arcing creates high intensity heating at the point of the arc resulting in burning particles that may easily ignite surrounding material, such as wood framing or insulation. The temperatures of these arcs can exceed 10,000 degrees Fahrenheit .



WHAT IS THE DIFFERENCE BETWEEN A GROUND FAULT AND AN ARC FAULT?

There is a major difference between the functioning of an AFCI as compared to a GFCI (Ground Fault Circuit Interrupter). The function of the GFCI is to protect people from the deadly effect of electric shock that could occur if parts of an electrical appliance or tool become energized due to a ground fault. The function of the AFCI is to protect the branch circuit wiring from dangerous arcing faults that could initiate an electrical fire. AFCI and GFCI technologies can co-exist with each other and are a great complement for the most complete protection that can be provided on a circuit.

HOW ARE ARCING FAULTS DETECTED?

Traditional overcurrent protective devices cannot detect these types of arcs. The capability now exists to detect many of these arcing conditions and disconnect the problem circuit through the use of Arc Fault Circuit Interrupters (AFCIs).



HOW DOES AN ARC FAULT CIRCUIT INTERRUPTER (AFCI) WORK?

In essence, the detection is accomplished by the use of advanced electronic technology to monitor the circuit for the presence of “normal” and “dangerous” arcing conditions. Some equipment in the home, such as a motor driven vacuum cleaner or furnace motor, naturally create arcs. This is considered to be a normal arcing condition. Another normal arcing condition that can sometimes be seen is when a light switch is turned off and the opening of the contacts creates an arc.

WHEN ARE THEY REQUIRED TO BE INSTALLED

Whenever a new building is constructed such as a new home or an addition, AFCI protection is required to be installed in accordance with the 2009 International Residential Code or 2008 National Electrical Code.

WHERE ARE THEY REQUIRED TO BE INSTALLED

The 2009 International Residential Code and the 2008 National Electrical Code now require AFCI protection on all 120 volt, single phase, 15 & 20 amp branch circuits that supply power to rooms such as living rooms, dining rooms, bedrooms and any similar room or area. Virtually all areas not protected by GFCI's are required to be AFCI protected.



WHY IS IT IMPORTANT TO HAVE AN AFCI BREAKER INSTALLED IN MY HOME?

AFCIs were developed in response to an identified electrical problem causing fires in the home as noted by the Consumer Product Safety Commission and other prominent organizations. An AFCI provides a higher level of protection than a standard circuit breaker by detecting and removing the hazardous arcing condition before it becomes a fire hazard.

CAN I HAVE AFCI'S INSTALLED EVEN IF I'M NOT REQUIRED TO INSTALL THEM?

Absolutely, do you only place locks on the front door of the house? Just like placing locks on all external doors and windows for security reason, it is logical to request AFCI protection on all 15 and 20 amp branch circuits, not just those in the bedroom, to protect the entire home from an electrical arcing ignition hazard. AFCIs are available through electrical distributors and in most home centers. The only major physical requirement is that the AFCI requires directly wired hot and neutral wires on the circuit you're going to protect.

IT'S ALL ABOUT SAFETY

Smoke alarms, fire extinguishers and escape ladders are all examples of emergency equipment used in homes to take action when a fire occurs. AFCIs are products designed to detect a wide range of arcing electrical faults to help reduce the electrical system from being an ignition source of a fire. Conventional overcurrent protective devices do not detect low level hazardous arcing currents that have the potential to initiate electrical fires. AFCIs are the next generation product in electrical circuit protection. As you evaluate your new home's construction or consider upgrading or remodeling your current electrical system, consider enhancing the protection of your electrical system with AFCI.
